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**METALLIC COMPOSITES**

**Work Unit Directive (WUD) 56**



**Daniel B. Miracle**

**Metals Branch, Metals Development Section (AFRL/MLLMD)**

**Metals, Ceramics, and NDE Division**

**Materials and Manufacturing Directorate**

**Air Force Research Laboratory, Air Force Materiel Command**

**Wright-Patterson Air Force Base, OH 45433-7750**

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**AIR FORCE RESEARCH LABORATORY**

**AIR FORCE MATERIEL COMMAND**

**WRIGHT-PATTERSON AIR FORCE BASE, OH 45433-7750**

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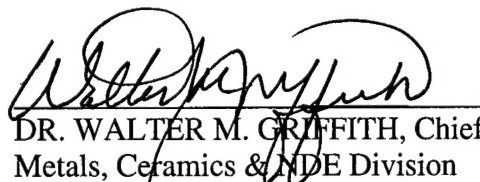
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DR. DANIEL B. MIRACLE  
Metals Branch  
Metals, Ceramics & NDE Division



DR. ROLLIE E. DUTTON, Chief  
Metals Branch  
Metals, Ceramics & NDE Division



DR. WALTER M. GRIFFITH, Chief  
Metals, Ceramics & NDE Division  
Materials & Manufacturing Directorate

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### **Books**

1. *Intermetallic Matrix Composites*, (eds. D.L. Anton, P.L. Martin, D.B. Miracle, and R. McMeeking), MRS Symp. Proc. **194**, Pittsburgh, PA, (1990)
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1. D.B. Miracle and R. Darolia; "Structural Applications of NiAl", in *Intermetallic Compounds: Principles and Practice*, (eds. J. H. Westbrook and R. L. Fleischer), John Wiley and Sons, New York, NY, pp 53-72 (1994)
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#### **Non-Refereed Publications**

1. D.B. Miracle; *The Deformation of NiAl Bicrystals*, WL-TR-92-4111, Wright-Patterson AFB, OH (1992)
2. S. Krishnamurthy, P.R. Smith, and D.B. Miracle; "Preliminary Study of a Ti-24.5Al-17Nb/SCS-6 Composite", *Titanium Metal Matrix Composites II*, (eds. P. R. Smith and W.C. Revelos), WL-TR-93-4105, Wright-Patterson AFB, OH pp 59-75 (1993)
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5. B.S. Majumdar, C.J. Boehlert, and D.B. Miracle; "Deformation Mechanisms and Structure-Property Relations in O-Alloys and MMC's (Ti-25Al-17Nb System)", *Orthorhombic Titanium Matrix Composites*, (ed. P. R. Smith), WL-TR-95-4068, Wright-Patterson AFB, OH pp 64-82 (1995)
  6. S. Krishnamurthy, P.R. Smith, and D.B. Miracle; "Microstructure and Properties of 'Neat' and SCS-6 Reinforced Ti-24.5Al-17Nb (1Mo) Composite Materials", *Orthorhombic Titanium Matrix Composites*, (ed. P. R. Smith), WL-TR-95-4068, Wright-Patterson AFB, OH pp 83-104 (1995)
  7. L. Shaw and D.B. Miracle; "Microscopic Damage of Ti-6Al-4V/SiC Composites Under Transverse Loading Conditions", in *Light-Weight Alloys for Aerospace Applications III*, (eds. E.W. Lee, N.J. Kim, K.V. Jata, and W.E. Frazier), TMS, Warrendale, PA, pp 379-390 (1995)
  8. C.J. Boehlert, B.S. Majumdar, and D.B. Miracle; "Effects of Microstructure on the Tension, Fatigue Crack Growth, and Creep Behavior of a Ti-25Al-17Nb Alloy", *Fatigue and Fracture of Ordered Intermetallics II*, (eds. T. Srivatsan, W.O. Soboyejo, and R.O. Ritchie), TMS, Warrendale, PA, pp 135-153 (1995)
  9. D.B. Miracle, M.A. Foster, and C.G. Rhodes; "Phase Equilibria in Ti-Al-Nb Orthorhombic Alloys", in *Titanium '95-Science and Technology*, (eds. P.A. Blenkinsop, W.J. Evans, and H.M. Flower), Proc. Eighth World Conf. on Ti, University Press, Cambridge, UK, pp 372-379 (1996)
  10. Pandey, B.S. Majumdar, and D.B. Miracle, "Processing and Fracture Behavior of SiC/Al Alloy Composites," in *Processing and Fabrication of Advanced Materials V*, (eds. T.S. Srivatsan and J.J. Moore), TMS, Warrendale, PA, pp 185-198 (1996)
  11. K.L. Kendig, R. Gibala, B.S. Majumdar, D.B. Miracle, and S.G. Warrior; "Nanoindentation as a Probe for Residual Stress," *Light Weight Alloys for Aerospace Applications IV*, TMS, Warrendale, PA, pp. 299-310, (1997)
  12. D.B. Gundel and D.B. Miracle; "The Influence of Interface Structure and Composition on the Response of Single-Fiber SiC/Ti-6Al-4V Composites to Transverse Tension", in *Orthorhombic Titanium Matrix Composites II*, (ed. P. R. Smith), WL-TR-97-4082, Wright-Patterson AFB, OH pp 34-46 (1997)
  13. D.B. Gundel and D.B. Miracle; "Effect of the Interface on Crack Deflection and Fiber Bridging During Fatigue Crack Growth of SiC/Ti-6Al-4V Composites", in *Orthorhombic Titanium Matrix Composites II*, (ed. P. R. Smith), WL-TR-97-4082, Wright-Patterson AFB, OH pp 73-82 (1997)
  14. C.J. Boehlert, B.S. Majumdar, V. Seetharaman and D.B. Miracle; "The Phase Evolution, Tensile and Creep Behavior of Near Stoichiometric Ti<sub>2</sub>AlNb Orthorhombic Alloys", in *Orthorhombic Titanium Matrix Composites II*, (ed. P. R. Smith), WL-TR-97-4082, Wright-Patterson AFB, OH pp 212-227 (1997)

#### **Invited Presentations and Colloquia**

1. "On the Mechanism of Ductility in NiAl", TMS Spring Meeting, Anaheim, CA, 21 Feb 1990
2. "Metallic Composites", University Research Initiative Winter Study Group, Santa Barbara, CA, 8 Jan 1991
3. "Metallic Composites for High Temperature Structural Materials", Virginia Polytech, Blacksburg, VA, 22 Mar 1991
4. "High Temperature Structural Aerospace Materials", Cornell University, Ithaca, NY, 5 Apr 1991
5. "Deformation in Advanced Metallic Composites", Office Nationale d'Etude et Recherche Aeronautique (ONERA), Paris, France, 8 Jul 1991
6. "Deformation and Atomic Resolution Microscopy in NiAl Bicrystals", General Electric Corporate Research and Development Center, Schenectady, NY, 2 Dec 1991
7. "Research in Advanced Metallic Composites", General Electric Corporate Research and Development Center, Schenectady, NY, 3 Dec 1991
8. "High Temperature Structural Aerospace Materials", Cleveland Chapter of ASM, Cleveland, OH, 4 May 1992
9. "The Influence of Matrix Deformation on Tensile Behavior in Continuously-Reinforced MMC's", International Conference on Composite Materials IX, Madrid, Spain, 14 Jul 1993
10. "Fiber Fragmentation in Continuously-Reinforced Ti-Based MMC's", Cambridge University, Cambridge, England, 19 Jul 1993
11. "Structural Applications of NiAl", Structural Intermetallics: Perspectives on Science and Technology, Defence Metallurgical Research Laboratory, Hyderabad, India, 5 Feb 1994
12. "Ti-Alloy Metal Matrix Composites for Aerospace Applications", MRS of India Annual Meeting, Defence Research and Development Laboratory, Hyderabad, India, 6 Feb 1994
13. "Interface Properties in Continuously-Reinforced Ti-Based MMC's", The Metallurgical Society Annual Meeting, San Francisco, CA 1 Mar 1994
14. "A Review of the Status and Developmental Issues for Continuously-Reinforced Ti-Aluminide Composites for Structural Applications", MRS Spring Meeting, San Francisco, CA, 5 Apr 1994
15. "An Experimental Study of Residual Fiber Strains in Ti-15-3 Continuous Fiber Composites", Carnegie Mellon University, Pittsburgh, PA, 19 Apr 1994
16. "Fundamental Aspects of Continuously-Reinforced MMC's", with B. Maruyama and D. Gundel, MMC Information and Analysis Center, Salt Lake City, UT, 8 Feb 1995
17. "Research and Development of Aerospace Materials," Tau Beta Pi Induction Ceremony, Wright State University, Dayton, OH, 10 Mar 1995
18. "Development and Technology Transition of Fibre-Reinforced MMC's for Aerospace Applications", Department of Materials Science and Metallurgy, Cambridge University, Cambridge, UK, 16 Oct 1995

19. "Transverse Interface Properties in Fibre-Reinforced MMC's Using a Cruciform Sample Geometry", Department of Materials Science, Oxford University, Oxford, UK, 30 Oct 1995
20. "Interface Properties in Continuously-Reinforced Ti-MMC's", Department of Materials Science, University de Leuvan, Leuvan-le-Neuve, Belgium, 4 Mar 1996
21. "Transverse Characterization of Ti-6Al-4V/SiC Composites", Max-Planck Institute, Stuttgart, Germany, 2 Apr 1996
22. "Transverse Interface Properties in Fibre-Reinforced MMC's Using a Cruciform Sample Geometry", Department of Materials Science, Imperial College, London, UK, 18 Jun 1996
23. "Relationships Between Interface Properties and Composite Properties in Ti-Based MMC's", Department of Materials Science, University of Birmingham, Birmingham, UK, 5 Jul 1996
24. "Metallic Composites," AFOSR Contractor's Meeting, Bar Harbor, ME, 22 Aug 1996.
25. "Interfaces in SiC/Ti MMC's and Their Influence on Properties", College of Engineering and Applied Science, University of Colorado, Boulder, CO, 20 Mar 1997
26. "Interface Development for Titanium Matrix Composites", AeroMat, Williamsburg, VA, 14 May 1997
27. "Study and Development of Interfaces in Titanium Matrix Composites", Department of Materials Science and Engineering, University of Cincinnati, Cincinnati, OH, 23 May 1997
28. "Transverse Tension and Creep of SiC/Ti-Alloy MMC's", TMS Fall Meeting, Indianapolis, IN, 16 Sep 1997
29. "Relationships Between Interface Properties and Composite Properties", National Science Foundation/Institute for Mechanics and Materials Workshop on Composite Materials, Mescalero, NM, 7 Oct 1997